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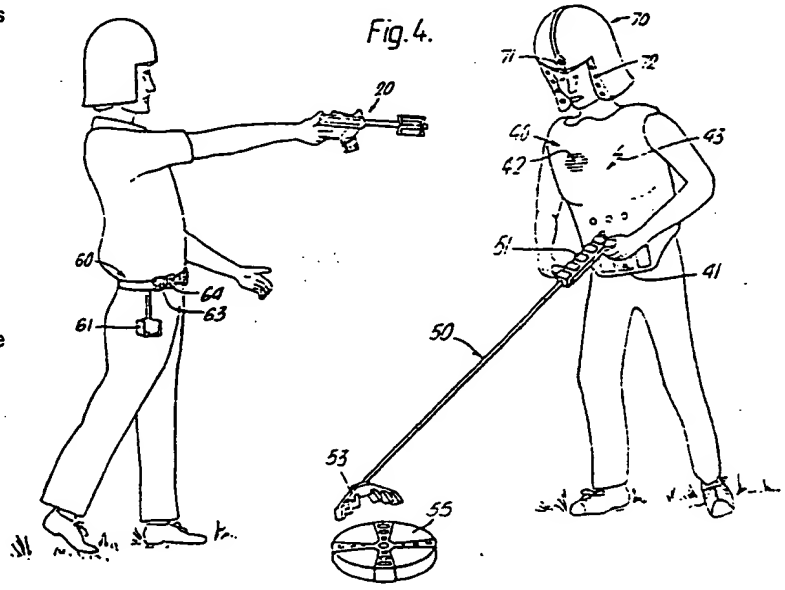
(54) Portable electronic toy

(57) A portable electronic toy comprises an ultrasonic or infrared transmitter of medium to short range, for example up to 150 m, and a receiver for a transmitted signal from another such toy. When the receiver is energised, an alarm circuit is activated which preferably includes a luminant flash unit and a siren or warble tone generator, and the transmitter is preferably temporarily deactivated at the same time. A toy gun 20, toy landmine detector 50, and toy landmine 55 are disclosed, but other toys such as a toy waistbelt 60 and holster 61, a toy helmet 70 and a toy chest armour plate 40 are described which only include respective receiver and alarm circuitry. All of the toys are battery-operated.

Fig. 4.



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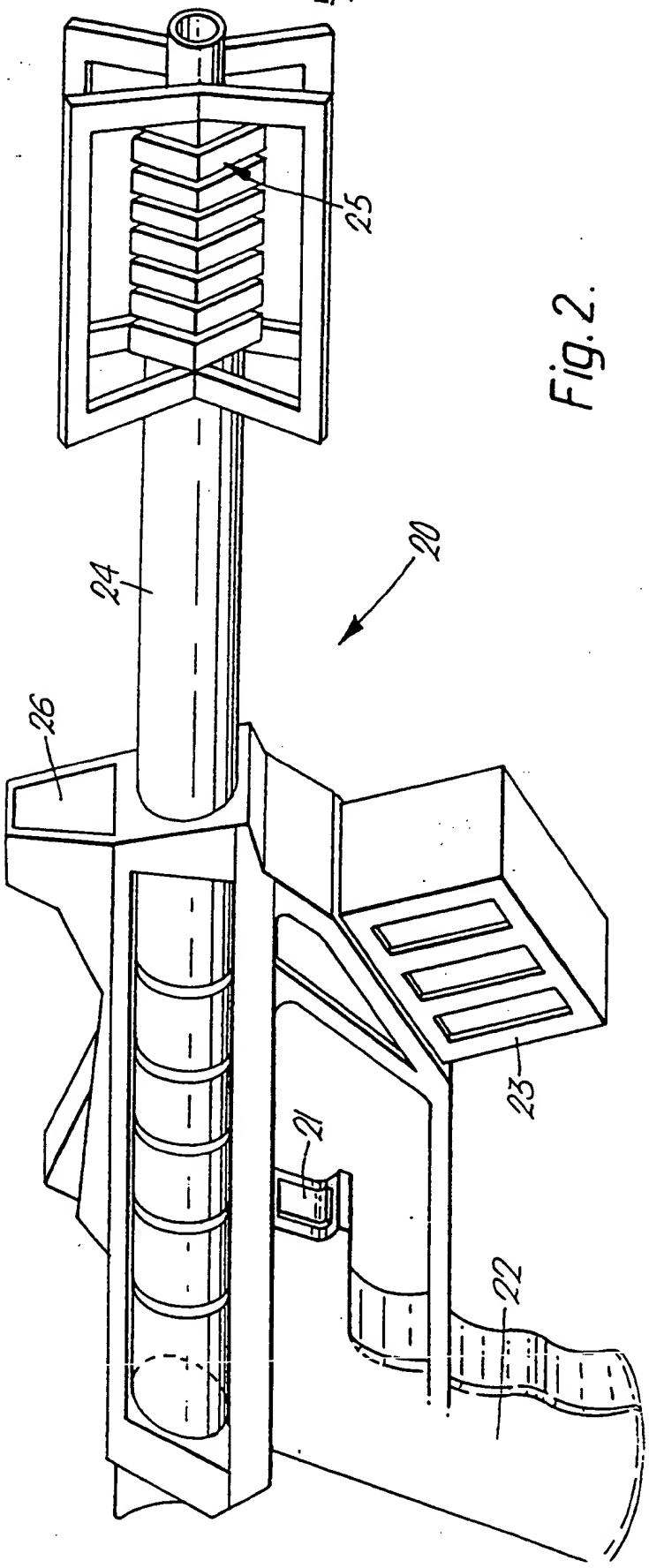

Fig. 2.

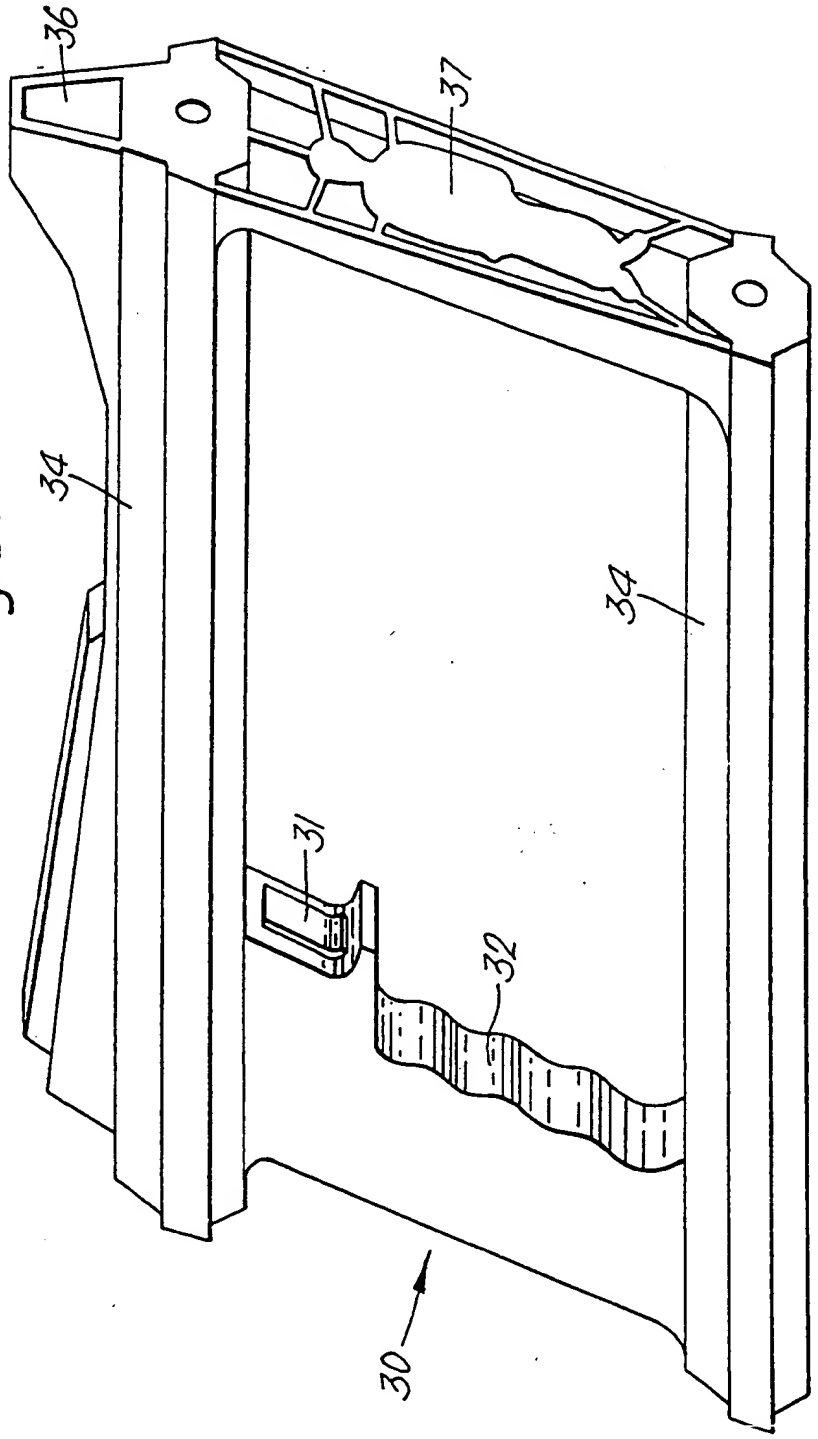

Fig. 3.

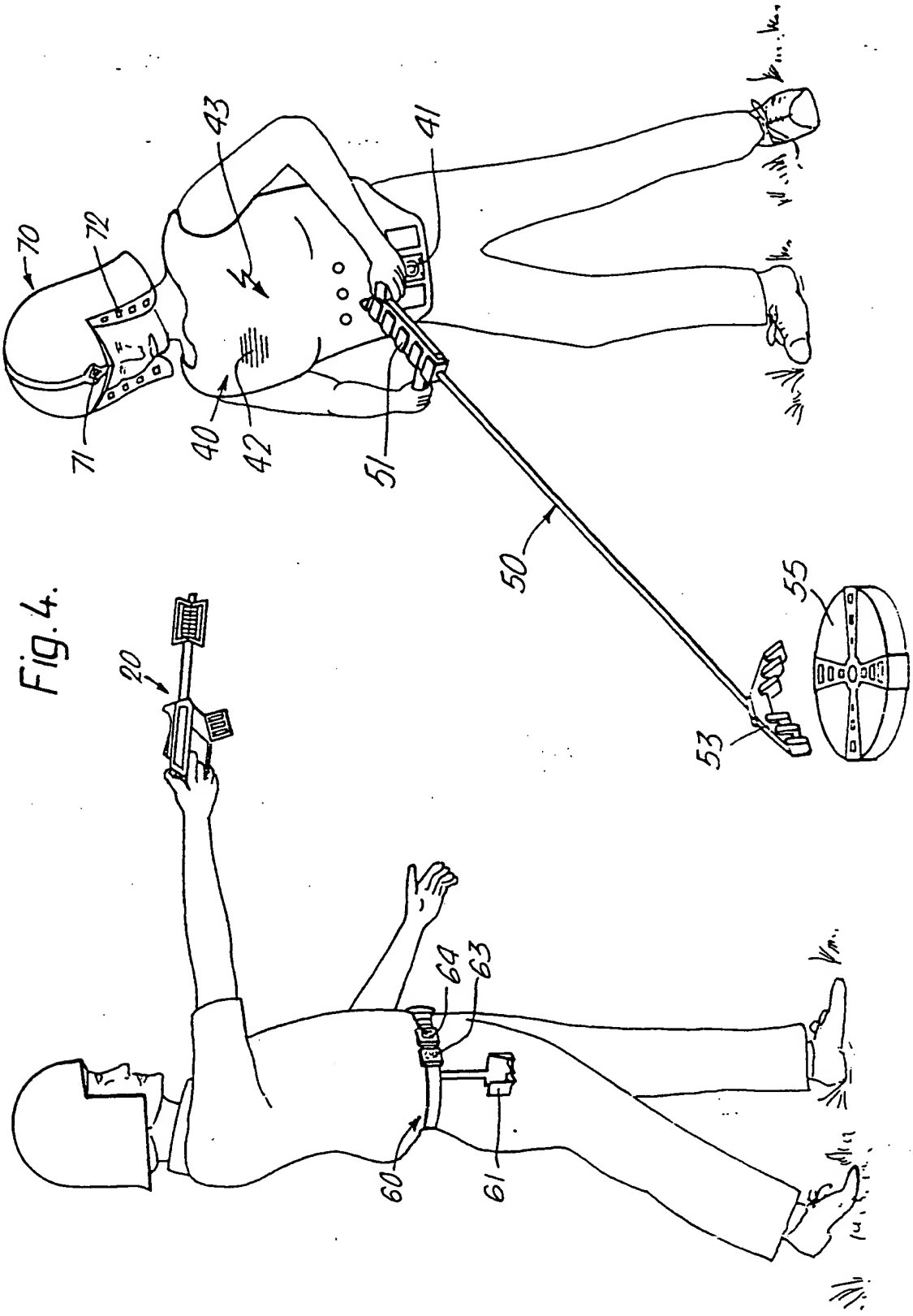

Fig. 4.

SPECIFICATION

A portable electronic toy

The present invention relates to a portable electronic toy or kit of such toys of which the toy or elements of the kit are capable of transmitting and receiving an ultrasonic or infrared signal. In particular, the invention provides a toy gun, and a kit of parts including a toy gun, a holster and belt, a chest armour plate, and a helmet. The kit may optionally include a toy landmine and toy landmine detector.

According to the present invention there is provided a portable toy including direct current supply circuitry comprising a transmitter circuit for transmitting a short or medium range directional signal in the ultrasonic or infrared frequency band, a receiver responsive only to an ultrasonic or infrared signal transmitted from another such toy, and an alarm circuit adapted to emit an audible and/or visible alarm signal responsive to the receiver.

Advantageously, the transmitter circuit includes means to temporarily deactivate the ultrasonic or infrared signal transmitter responsive to the receiver, such as a time lag relay switch.

Preferably, the transmitter circuit is adapted to transmit an ultrasonic signal with a frequency of from 30 to 50 KHz having a range of up to 150 m.

The portable toy preferably comprises a toy with a trigger or switch to activate the transmitter, a receiver located in such a manner that a transmitted signal from the toy itself does not activate the receiver, but adapted as a target for a transmitted signal from another such toy such that when activated by the targeted signal, the receiver activates an alarm signal such as a flasher unit and/or a siren or the like. Such a toy may be adapted as a toy gun, a toy landmine, or a toy landmine detector.

Alternatively, the portable toy comprises the said receiver circuit and alarm circuit without the transmitter circuit, wherein such a toy acts as a portable target for another toy including a transmitter, and is preferably adapted to be worn on the person to provide a moving target. For example a toy comprising a receiver and alarm circuit alone may be adapted as a toy gun holster and/or belt, a wrist, arm or shoulder strap, a chest armour plate, or a helmet.

Preferred embodiments of a portable electronic toy in accordance with the invention will now be described with reference to the accompanying drawings in which:

Figure 1 is a circuit diagram illustrating transmitter, receiver and alarm circuits for use in a portable electronic toy such as a toy gun, toy landmine or toy landmine detector, in accordance with the present invention,

Figure 2 is a side perspective view of a toy gun in accordance with the invention,

Figure 3 is a side perspective view of an alternative toy gun in accordance with the invention, and

Figure 4 illustrates elements of a kit of parts in accordance with the invention in use including a toy gun, a gun holster and waistband, a helmet, a chest armour plate, and a toy landmine and landmine detector.

The circuitry illustrated in Figure 1 shows a transmitter circuit 1 comprising a 40 KHz output transducer 2 for transmitting a directional ultrasonic signal up to 100 m in range (i.e. short to medium range), a variable resistor RV2 for adjusting the frequency for capacity to prevent local interference with other electrical equipment in the vicinity, a 9 volt D.C. supply 3, a 9V D.C. relay R1, and a relay switch circuit 4. The transmitter circuit is activated by closing trigger 5 and switch 6, but only a pulse is produced. A siren 9 may be used to produce a sound when the trigger is closed.

A receiver circuit 7 comprises a 40KHz input transducer 8, and includes a variable resistor RV1 for adjusting the receiver sensitivity to a signal received from a remote source. The receiver is phased with the transmitter such that the receiver is deactivated when the trigger 5 is closed to activate the transmitter.

An alarm circuit comprises siren or warble tone generator responsive to the receiver circuit being activated, and a flash unit 10 comprising an xenon tube 11 characterised by a 300 V working potential and 3KV pulse of 1/25,000 sec. flash duration. T1 is an ignitor transformer to give a 3.5KV pulse. A neon bulb 12, a series of flashing bulbs or light emitting diodes (LEDS) may also be included in the flash unit circuit 10 which is supplied by a 3 volt D.C. supply 13.

When an ultrasonic signal from a remote source is received by receiver 8, a visible alarm signal is generated by flash unit 10 and an audible signal may be produced as well. However, this simultaneously deactivates the transmitter circuit 1 by virtue of the arrangement of circuit components for a period of time of approximately 5 to 10 seconds. It will be seen that when two toys are provided with this circuitry, a directional ultrasonic signal produced from one toy targeted on and received by a second toy will temporarily incapacitate the second toy's transmitter, thus providing for enhanced interaction between two toys.

Figure 2 illustrates a toy gun in accordance with the invention. The toy gun 20 comprises a stock portion including a trigger 21, handle 22 and magazine 23. The handle 22 and magazine 23 may be adapted as a battery compartment or a compartment to house the circuitry described above. The barrel portion 24 is preferably made of coloured translucent plastics tubing and houses the flash unit described above. The ultrasonic transmitter may be housed in the front of the barrel at 25, while the ultrasonic receiver is housed above the barrel at 26 so that any signal transmitted from the gun 20 itself will not interfere with the receiver.

Figure 3 shows a different toy gun 30 having trigger 31, handle 32, and two barrels 34, in which one or both barrels may house a respective ultrasonic transmitter. A receiver is located at 36 above the line or lines of fire of the two barrels. A target 37 is incorporated which may if desired be adapted as or include a receiver in place of receiver 36.

Figure 4 illustrates children at play with various

toys in accordance with the invention, which may form a kit of parts with instructions for use in playing different games. The following examples are intended to be illustrative:

Example 1.

Toy gun 20 is fired at opponent who is within range and who possesses a similar toy gun. When opponent's receiver registers a "hit", his transmitter is temporarily incapacitated, simultaneously as lights flash and alarm sounds. Thus, opponent is unable to fire back and must "play dead" for a short time.

Example 2.

Toy guns 20 are used in conjunction with a chest armour plate 40 which may be in moulded plastics material with back and shoulder straps. A receiver 41 is included, together with a warble tone loudspeaker 42 and stylized flashing light display 43, which are energised when the receiver registers a "hit" from an opponent's toy gun.

Example 3.

A toy landmine detector 50 is provided having a handle portion 51 with a trigger and a stem portion 52 with a sweeper sensor 53 at one end. The sensor includes an ultrasonic transmitter and receiver. A toy landmine 55 comprises a disc housing a transmitter (which transmits a continuous signal once switched on) on one side and a receiver on the opposite side. Thus the detector 50 must approach the toy landmine 55 on the receiver side to score a "hit" causing lights to flash on the landmine. If approached on the transmitter side of the landmine, the landmine's transmitter will energise the detector's receiver and lights will flash on the detector. It will be appreciated that the transmitter and receiver on the landmine are hidden from view, so that skill is involved in scoring a "hit".

Example 4.

Two or more toy guns 20 or 30 are used in conjunction with (a) a waistband 60 and holster 61 wherein the waistband includes a receiver unit 63 and flashing light unit 64, (b) a shoulder strap, arm band or wristband, which latter may be adapted as a wristwatch (not illustrated) each having a respective receiver and flashing light or other alarm unit, and/or (c) a helmet 70 having a receiver 71, and flashing lights 72 on either side of a facial surround. As above, illumination of lights and sounding of alarm indicate a "hit", which may be given various scores. If necessary, the toy gun's receiver may be inactivated.

Example 5.

Two or more toys with a transmitter and/or a receiver may be used to detect the location of visible or hidden moving target provided by another such toy.

It will be apparent that each toy described above must be provided with its own battery or batteries to provide independent D.C. supply.

CLAIMS

1. A portable toy including direct current supply circuitry comprising a transmitter circuit for transmitting a short to medium range directional signal in the ultrasonic or infrared frequency band, a receiver responsive only to an ultrasonic or infrared signal transmitted from another such toy, and an alarm circuit adapted to emit an audible and/or visible alarm signal responsive to the receiver.

2. A portable toy as claimed in Claim 1 wherein the transmitter circuit includes means to temporarily deactivate the ultrasonic or infrared signal transmitter responsive to the receiver.

3. A portable toy as claimed in Claim 1 or Claim 2 adapted to transmit an ultrasonic signal with a frequency of from 30 to 50 KHz having a range of up to 150 m.

4. A portable toy for use in conjunction with a toy as claimed in any of the preceding claims, but including the said receiver and alarm circuit and excluding the said transmitter circuit.

5. A kit of parts comprising one or more toys as claimed in any of Claims 1 to 3.

6. A kit of parts comprising one or more toys as claimed in any of Claims 1 to 3 together with one or more toys as claimed in Claim 4.

7. A portable toy as claimed in Claim 1, comprising a trigger or switch to activate the transmitter, a receiver located in such a manner that a transmitted signal from the toy itself does not activate the receiver, but adapted as a target for a transmitted signal from another such toy such that when activated by the targeted signal, the receiver activates an alarm signal such as a luminant emission and/or audible sound.

8. A portable toy as claimed in Claim 7, adapted as a toy gun.

9. A portable toy as claimed in Claim 7, adapted as a toy landmine, or toy landmine detector.

10. A toy gun substantially as described herein with reference to Figures 1 and 2, or Figures 1 and 3 of the accompanying drawings.

11. A toy landmine and toy landmine detector substantially as described herein with reference to Figures 1 and 4 of the accompanying drawings.

12. A kit of parts comprising two or more elements selected from a toy gun, a toy landmine, a toy landmine detector, a toy waistbelt and holster, a toy arm, wrist or shoulder band, a toy chest armour plate, or a toy helmet, substantially as described herein with reference to the Examples and or with reference to Figure 4 of the drawings.

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